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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/534,682	03/24/2000	Lloyd Watts	ANSCP001	1800

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EXAMINER

FAULK, DEVONA E

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 02/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/534,682

Applicant(s)

WATTS, LLOYD

Examiner

Devona E. Faulk

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1,3,4,12 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by Lyon (4,536,844).

Regarding **claim 1**, Lyon discloses a method and apparatus of simulating aural response information comprising a cascaded/parallel filter bank, which reads on a system for processing audio signals, comprised of a number of bandpass filters (42,44,46,48,50 and 52). Bandpass filters allow signals between two specific frequencies to pass. It is inherent to a filter that it is configured to process a range of frequencies, and to process a selected frequency. It is also inherent that filters have coefficients that are used to process a given frequency.

Claim 3 claims the system of claim 1, wherein the at least one filter is configured to process a first frequency and a second frequency that is at least one interval away from the first frequency. As stated above apropos of claim 1, Lyon meets all elements of that claim. It is inherent to bandpass filters that they can process a range of frequencies and those frequencies would have to be separated by some interval or period.

Claim 4 claims the system of claim 3 wherein the interval is an octave. As stated above apropos of claim 1, Lyon anticipates all elements of that claim. The interval being an octave is a matter of design choice.

2. Regarding **claim 12**, Lyon discloses a method and apparatus of simulating aural response information comprising a cascaded/parallel filter bank, which reads on a system for processing audio signals, comprised of a number of cascaded biquadratic filters (28,30,32,34,36,38) that each feed into a corresponding bandpass filter (42,44,46,48,50 and 52) (Figure 1). Bandpass filters allow signals between two specific frequencies to pass. It is inherent to a filter that it is configured to process a range of frequencies, and to process a selected frequency. It is also inherent that filters have coefficients that are used to process a given frequency and since the biquadratic filters output's are inputs to corresponding bandpass filters, then inherently it's coefficients are being shared.

Claim 14 claims the system of claim 12, wherein the second frequency is spaced apart from the first frequency by at least one octave. As stated above apropos of claim 12, Lyon anticipates all elements of that claim. The interval being an octave is a matter of design choice.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 5-11, 15-20** are rejected under 35 U.S.C. 102(b) as being anticipated by Lyon (4,536,844) in view of Menkhoff et al. (U.S. Patent 6,137,349)

Claim 5 claims the system of claim 4, wherein at least one filter is configured to sample the first frequency at a first sampling rate and the second frequency at a second sampling rate. As stated above apropos of claim 4, Lyon meets all elements of that claim. Menkhoff teaches of a filter combination for sampling rate conversion comprising a time varying filter. The time varying filter provides the capability of varying the sampling rate. Modifying Lyon's apparatus so that at least one filter is a time varying one reads on the claimed matter. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to include at least one time varying filter in Lyon's apparatus for the benefit of achieving spectral translation or sampling rate changes or conversions.

Claim 6 claims the system of claim 5, wherein the second frequency is lower than the first frequency and the second sampling rate is lower than the first sampling rate. As stated above apropos of claim 5, the combination of Lyon and Menkhoff meets all the elements of that claim. It would be a matter of choice to have a second frequency and second sampling rate lower than the first frequency and first sampling rate. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to second frequency and sampling rate lower than the first frequency and sampling rate as claimed for the benefit of achieving a specific desired design specification for sampling.

Claim 7 claims the system of claim 6, wherein the second sampling rate is lower than the first sampling rate by two raised to the number of octaves spacing between the first frequency and the second frequency. As stated above apropos of claim 6, the combination of Lyon and Menkhoff meets all elements of that claim. It would have been a matter of design choice to have second sampling lower than the first as claimed. Thus, it would have been obvious to one of

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ordinary skill in the art at the time of the invention to modify the sampling rate difference as claimed for the benefit of achieving a specific desired design specification for sampling.

Claim 8 claims the system of claim 7, wherein the sequence of digital filters is configured to process frequencies in a first octave at the first sampling rate. As stated above apropos of claim 7, the combination of Lyon and Menkhoff meets all elements of that claim. Lyon teaches of a series of linear filters. Menkhoff teaches of a time varying filter and so it would be obvious to have a difference in the sampling rate, and a design choice to have the sequence of filters configured to process frequencies as claimed. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a sequence of filters configured as claimed for the benefit of achieving a specific desired design specification for sampling.

Claim 9 claims the system of claim 8, wherein the sequence of digital filters is further configured to process frequencies in a second octave at the second sampling rate. As stated above apropos of claim 8, the combination of Lyon and Menkhoff meets all elements of that claim. Lyon teaches of a series of linear filters. Menkhoff teaches of a time varying filter and so it would be obvious to have a difference in the sampling rate, and a design choice to have the sequence of filters configured to process frequencies as claimed. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a sequence of filters configured as claimed for the benefit of achieving a specific desired design specification for sampling.

Claim 10 claims the system of claim 9, wherein each coefficient is represented by fewer than 13 bits. As stated above apropos of claim 9, the combination of Lyon and Menkhoff meets

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all elements of that claim. It is well known in the art the filters can be represented by bits and it is a matter of choice as to how many bits. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to represent each coefficient as claimed for the benefit of achieving a desired design specification.

Claim 11 claims the system of claim 10, wherein each coefficient is represented by 12 bits. As stated above apropos of claim 10, the combination of Lyon and Menkhoff meets all elements of that claim. It is well known in the art the filters can be represented by bits and it is a matter of choice as to how many bits. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to represent each coefficient as claimed for the benefit of achieving a desired design specification.

Claim 15 claims the system of claim 14, wherein the first filter is configured to sample the first frequency at a first sampling frequency and the second filter is configured to sample a second frequency at a second sampling frequency. As stated above apropos of claim 14, Lyon meets all elements of that claim. Menkhoff teaches of a filter combination for sampling rate conversion comprising a time varying filter. The time varying filter provides the capability of varying the sampling rate. Modifying Lyon's apparatus so that at least one filter is a time varying one reads on the claimed matter. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to include at least one time varying filter in Lyon's apparatus for the benefit of achieving spectral translation or sampling rate changes or conversions.

Claim 16 claims the system of claim 15, wherein the second frequency is lower than the first frequency, and the second sampling frequency is lower than the first sampling frequency by

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a ratio of the first frequency to the second frequency. As stated above apropos of claim 15, the combination of Lyon and Menkhoff meets all the elements of that claim. It would be a matter of choice to have a second frequency and second sampling rate lower than the first frequency and first sampling rate. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to second frequency and sampling rate lower than the first frequency and sampling rate as claimed for the benefit of achieving a specific desired design specification for sampling.

Claim 17 claims the system of claim 14, wherein the filters are evenly grouped into at least a first and a second octave, the first filter being in the first octave and the second filter being in the second octave. As stated above apropos of claim 14, the combination of Lyon and Menkhoff meets all the elements of that claim. It would be a matter of choice to have the filters grouped as claimed and the first and second filter being in their corresponding octaves as claimed. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to group the filters as claimed for the benefit of achieving a specific desired design specification.

Claim 18 claims the system of claim 17 wherein the filters in the first octave are sampled at a first sampling frequency that is at least twice as high as a highest frequency processed by the first octave. As stated above apropos of claim 17, the combination of Lyon and Menkhoff meets all the elements of that claim. It would be a matter of choice to have filters sampled as claimed. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have the filters sampled as claimed for the benefit of achieving a specific desired design specification for sampling.

Claim 19 claims the system of claim 18, wherein the second octave is one octave lower than the first octave, and the filters in the second octave are sampled at a second sampling rate that is half as high as the first sampling frequency. As stated above apropos of claim 17, the combination of Lyon and Menkhoff meets all the elements of that claim. It would be a matter of choice to have a second frequency and second sampling rate lower than the first frequency and first sampling rate. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to second frequency and sampling rate lower than the first frequency and sampling rate as claimed for the benefit of achieving a specific desired design specification for sampling.

Claim 20 claims the system of claim 19 wherein each filter in the first octave shares its coefficients with each filter in a corresponding position in the second octave. As stated above apropos of claim 19, the combination of Lyon and Menkhoff meets all the elements of that claim. Lyon teaches of the filters sharing coefficients since they are cascaded. It would be a matter of choice to have a second frequency and second sampling rate lower than the first frequency and first sampling rate. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have each filter share its coefficients as claimed for the benefit of achieving a specific desired design specification.

5. The indicated allowability of **claim 22** is withdrawn in view of the newly discovered reference(s) to Lyon (4,536,844) and Slaney, Malcolm (Lyon's Cochlear Model).

Rejections based on the newly cited reference(s) follow.

6. Regarding **claim 22**, Lyon discloses Lyon discloses a method and apparatus of simulating aural response information comprising a cascaded/parallel filter bank, which reads on a system

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for processing audio signals, comprised of a number of bandpass filters (42,44,46,48,50 and 52). Bandpass filters allow signals between tow specific frequencies to pass. It is known in the art that bandpass filters are configured to process a range of frequencies, and to process a selected frequency. It is also common knowledge in the art that filters have coefficients that are used to process a given frequency. Lyon's Cochlear Model discloses a model of the cochlear, using the Mathematica programming language, and using the same models as the applicant (See page 7, and 73). It is obvious therefore, that Lyon's apparatus (Figure) can be implemented using a program. The claimed steps are obvious in the functionality of Lyon's apparatus. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have a computer program comprising the claimed steps for the benefit of having signal-processing apparatus that is more efficient.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 703-305-4359. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

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A handwritten signature in black ink, appearing to read 'Minsun Oh Harvey', written in a cursive style.

MINSUN OH HARVEY
PRIMARY EXAMINER